



## ABB sees billion-dollar growth opportunity in alternative and renewable energy

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*New technologies enable large-scale wind power, small-scale distributed power in both developed and emerging markets*

London, U.K., June 8, 2000 – ABB, the global technology company, outlined its strategy for alternative energy solutions at a press conference in London today, saying it expects its share of the business to reach US\$ 1 billion within the next five years.

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“We have developed technologies that make wind power and other renewable and alternative energies economically attractive for the first time—both small-scale and large-scale solutions,” said Göran Lindahl, ABB’s President and CEO. “Especially important is the information technology (IT) and communication features that we’ve built into the systems, making them easier to operate and maintain and much more cost-effective than conventional approaches.”

“With deregulation in the power market, global efforts to cut pollution and government initiatives to boost electricity production from alternative energy—especially in Europe—we think this market is poised for tremendous growth,” Lindahl said. “With our technologies and global scope, we intend to be a leader in this market worldwide.”

As part of the strategy to rapidly develop this growth market, ABB unveiled its new wind power technology, called the Windformer(TM). The Windformer will enable the economical development of wind farms with outputs up to 300 megawatts (MW) or more—equivalent to a medium-sized fossil-fuel power plant. The Windformer(TM) also reduces power losses and can be used to connect wind farms directly to larger power grids, even from offshore.

ABB said demand for alternative energy sources and small-scale power generation—wind farms, fuel cells, combined heat and power plants using miniature gas turbines—has been sparked in large part by deregulation, which has forced power suppliers to put a higher priority on profitability. Small-scale power, because it requires less up-front capital investment, often meets this need better than conventional large power plants.

In addition, governments around the world have committed to cut greenhouse gas emissions, such as carbon dioxide (CO<sub>2</sub>) from, for example, burning coal to generate electricity, in line with the 1997 Kyoto Protocol on global warming. The European Commission recently called for the European Union

to increase the share of electricity generated from renewable energy sources to 22.1 percent by 2010 from 13.9 percent in 1997.

The expected growth in distributed power generation will significantly reduce CO2 emissions from future power generation. ABB estimates that as a result of the ongoing shift to renewable and small distributed power generation, emissions from newly installed power generating capacity will, by 2005, be about 25 percent lower than they were in 1997, even though the total power output will have increased.

ABB has shifted its focus from being a builder of traditional large-scale power plants with the recent divestitures of most of its power generation activities to ALSTOM of France and BNFL of the U.K. ABB remains a major supplier to this important sector and has targeted alternative energy as a growth opportunity that complements existing power markets.

Lindahl said ABB's strategy is to offer complete IT-enabled alternative energy solutions—from generation, transmission and distribution to financing and service—on a global scale. Noting that some 750 million of the world's households are not yet electrified, Lindahl said small-scale power generation could reduce the need to build large-scale power projects in the developing world, which would have significant environmental and financial benefits.

"This will not replace large-scale power generation, it's a complement," Lindahl said. "It will offer a more economically viable and environmentally preferable solution demanded in many parts of the world."

ABB is already the world's leading supplier of HVDC (High-Voltage Direct Current) Light systems to link various power sources to existing power grids economically. The company has also built in Europe some 1,500 small gas-fired power plants—Combined Heat and Power (CHP) plants that produce both electricity and steam to heat nearby buildings. The company has targeted primarily the heat and power requirements of medium-sized electricity consumers—apartment buildings, hospitals, and small industries. As part of its energy solutions offering, ABB provides financing for distributed power systems, such as leasing plans in which ABB builds, owns, operates and services the plant.

In small-scale distributed power generation, ABB is developing a range of miniature gas turbines with a number of partners. The company announced a joint venture with Volvo in 1998 to develop gas turbines with an output of 100 kilowatts or more—one to two kilowatts (kW) is enough to meet the requirements of an average home in the developed world. The joint venture, called Turbec, expects to ship the first five commercial units this summer, with a total of 50 turbines to be shipped by the end of the year.

ABB and DuPont of the U.S. have agreed on joint development of fuel cell systems for a variety of applications, in particular a very-low emission solution for distributed power

generation.

Key to the viability of decentralized power is ABB's IT-based network control, which allows small plants to be linked into microgrids, scaled-down local versions of power networks common at the national and international level. ABB's power network technology allows electricity to be traded among microgrids, creating a "virtual utility." Web-enabled control and service systems make it possible to monitor and maintain microgrids remotely.

**The technologies in brief**

Windformer: A new generation of wind power technology that significantly reduces the cost of power generated by large wind farms. The technology also allows wind farms to be built offshore.

Microturbines: These small, efficient and low-emission gas turbines provide electricity for homes, commercial buildings, hospitals, and small factories. Their compact size and high reliability make them suitable for small combined heat and power installations.

Fuel Cell Systems: Similar to batteries, fuel cells generate electricity through a chemical reaction, and produce very low emissions. They are small enough for residential and small commercial applications, making them ideal for use in areas without connections to existing power grids.

Microgrids: A microgrid is created by connecting a local group of small power generators using advanced sensing, communications, and control technologies—all integrated using IT solutions. The microgrid can trade power with larger grids, creating a virtual utility.

HVDC Light: A high-efficiency, low-loss power transmission system that allows power with variable frequencies—like windpower—to be economically linked directly to larger power grids.

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